Abstract of the Disclosure

A gold (Au) alloy bonding wire for a semiconductor device is provided. The Au alloy bonding wire is manufactured by adding at least one of polonium (Po), promethium (Pm), thulium (Tm), and boron (B) to high-purity gold of 99.999% or more in an amount of 3-30 parts per million (ppm) by weight and at least one of magnesium (Mg), sodium (Na), vanadium (V), molybdenum (Mo), and technetium (Tc) in an amount of 3-30 ppm by weight to the high-purity gold. In the Au alloy bonding wire, high-temperature reliability after ball bonding is not reduced and damage near a ball neck in forming an ultra low loop of the Au alloy bonding wire can be prevented.